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ABSTRACT

In the 1988-89 school year, the Austin (Texas) Independent School District's Office of Research and Evaluation undertook a new dropout research project. Part of this initiative, termed Project GRAD, attempted to develop a statistical equation by which one could predict which students were likely to drop out. If reliable predictive information could be developed, district and community resources could be more effectively targeted toward interventions with a more likely payoff. Study data were drawn from two sources: (1) AISD's longitudinal dropout file; and (2) other centrally maintained district data files accessed to obtain student information such as achievement test scores, demographic data, and history of compensatory education service. To develop a dropout prevention equation, a series of discriminant function and stepwise regression analyses were performed, using a cohort of first-time ninth graders for 1983-84. After completing 15 analyses using numerous predictor variables, researchers decided to run separate analyses by ethnic group. The results showed a 100 percent prediction for American Indian students; an 89.5 percent prediction for Asian student dropouts and a 100 percent prediction for stay-ins; and 67.5, 71.0, and 79.4 percent dropout predictions for White, Black, and Hispanic students, respectively. The study suggests that ethnicity is an extremely important predictive factor. Study limitations are discussed, and detailed information concerning the 16 analysis is appended. (3 references) (MLH)

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FINE-TUNING DROPOUT PREDICTION THROUGH DISCRIMINANT ANALYSIS: THE ETHNIC FACTOR

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FINE-TUNING DROPOUT PREDICTION THROUGH DISCRIMINANT ANALYSIS: THE ETHNIC FACTOR

Abstract

In the Austin Independent School District (AISD), Austin, Texas, a continuing concern with dropout prevention led in 1988-89 to a series of discriminant function and stepwise regression analyses aimed at developing a useful equation to predict which students would drop out.

In the summer of 1989, after months of labor and the introduction of dozens of predictor variables, inspiration struck one of the authors. Why not run separate analyses by ethnic group? The results were dramatic and gratifying--among them, 100% prediction for American Indian students. This was the most major of a number of "breakthroughs" which moved the researchers closer to their goal of correctly identifying the students most at risk of dropping out.

Introduction

Like virtually every other school district in the country, our urban, Texas district is concerned with the large percentage of our students who drop out of school. In the past calendar year, 1988-89, 1,974 students (11.2%) in grades 9-12 dropped out. In the most recent ninth-grade cohort for which data are available (first-time ninth graders of 1985-86), 27.5% of the students dropped out before graduation, down slightly from the 30.1% rate for the students in the previous cohort (first-time ninth graders of 1984-85), but up slightly from the 26.9% dropout rate of the students in the cohort before that (first-time ninth graders of 1983-84). With more than 50 special programs operating in the District with some hypothesized relationship to dropout prevention, these figures are obviously discouraging to school district administrators, the Superintendent, and the Board of Trustees. Therefore, in the 1988-89 school year, staff of the District's Office of Research and Evaluation (ORE) undertook a new research initiative in the area of dropouts.

Part of this initiative, termed Project GRAD, was the attempt to develop a statistical equation by which high school students who are likely to drop out could be reliably predicted. The impetus for this endeavor is obvious. If reliable predictive information could be developed, district and community resources could be more effectively targeted toward interventions with a likely payoff, rather than wasted on programs of unproven effectiveness.

The method of choice in this endeavor was discriminant function analysis. Discriminant function analysis is particularly appropriate as a statistical methodology for the

purpose of dichotomous prediction, in this case whether a student will drop out of or stay in school. Stepwise regression complements discriminant analysis by analyzing the data for the amount of variance that each variable contributes to the total model. After selecting a level of significance, each variable is examined to see if it contributes significantly to the prediction. AISD is well suited to analyses of this type in possessing a considerable range of centrally maintained data bases, as well as maintaining Statistical Analysis System (SAS) software on its IBM 4381 mainframe computer. See SAS Institute Inc. (1985).

Project GRAD also featured an evaluation of more than a dozen of the District's dropout prevention programs. (Evaluation findings are presented in Wilkinson, Frazer, Stewart and Ligon, 1989.) In both the program evaluation and the development of a prediction equation, evaluation staff relied heavily on centrally maintained District data bases, the nature and importance of which will be discussed below.

Data Sources

Data for the study were drawn from two sources: (1) AISD's longitudinal dropout file, called the Secondary Student Longitudinal File (SSLF), which is maintained by ORE, and (2) other centrally maintained District data files which were accessed to obtain other information about each student, including achievement test scores, demographic data, history of service in compensatory education, etc.

Secondary Student Longitudinal File (SSLF)

The Secondary Student Longitudinal File (SSLF) was created in 1983-84 as the means for the annual reporting of a valid dropout rate for the District and for each high school campus and as a vehicle for tracking students as they moved through the system. The file contains for each student the student's dropout status in each school year, as well as other basic information. A SAS format of the file is included as Attachment 1.

The SSLF has been made available to researchers nationwide. Persons interested in obtaining the file for research purposes should write the authors at 6100 Guadalupe, Austin, Texas 78752 or call 512-458-1227.

Other Data Files

A variety of data files were accessed to provide the student information--most of it from 1982-83--necessary for the analyses. Because of the age of the data, the files were stored on magnetic tape. Some tapes had been archived in long-term storage and had to be retrieved. A short description of each of the files used is provided below.

Student Master File (SMF): As its name indicates, the SMF is the District's primary student file. It contains basic information for each student, including date of birth (from which age was calculated), sex, ethnicity, and low-income status. The 1982-83 end-of-year SMF was matched with the 1983-84 beginning-of-year SMF to determine which students were new to the District in 1983-84.

Student Discipline File: The Student Discipline File contains individual student information about all severe disciplinary infractions (i.e., resulting in corporal punishment, suspension, or expulsion). The 1982-83 file provided the number of discipline incidents in which each student (who was in the District) had been involved as an eighth grader.

Texas Assessment of Basic Skills (TABS) File: The TABS file for 1983-84 provided the students' Math, Reading, and Writing raw scores and whether the students had mastered each of the tests or not.

Although most of the files were relatively accessible, the TABS file posed something of a challenge since the State of Texas had replaced the TABS with another criterion-referenced test in 1985-86. Although the tape file had been saved, it turned out that only an approximation of the file format, without explanatory notes, could be retrieved. Ultimately, the file format had to be requested from the state education agency.

Iowa Tests of Basic Skills (ITBS) File: The 1982-83 ITBS file was the source for all of the students' eighth-grade grade equivalent scores. Only the four skills area totals and the total battery scores were used, although other subtest scores (e.g., Reading Comprehension) were available.

Special Education Management System (SEMS) File: The SEMS file is the special education master file. The 1982-83 SEMS file provided the special education status of the students as they entered ninth grade. It also provided the number of daily special education contact hours for each ninth-grade student who was in special education at the beginning of 1983-84.

Language (LANG) File: The LANG File contains information about the District's limited-English-proficient (LEP) students, including their LEP status (LEP or non-LEP for the analyses). The end-of-year 1982-83 LANG file provided the LEP status of the 1983-84 entering ninth graders.

Bigg File: As its name suggests, the Bigg File is a big file which contains a multiyear history of the compensatory programs in which students have participated, as well as their achievement test scores from each year. Bigg File goes

back to the 1979-80 school year, so it was possible to obtain four years of data about the students' compensatory service, from 1979-80 through their eighth-grade year, 1982-83. Bigg File also supplied the students' LEP status for each of the same years.

The significance of these files does not lie in their uniqueness; other school districts undoubtedly have similar files. For the purpose of prediction, however, their importance cannot be overstated. It is relatively easy for researchers, and even for members of the general public, to identify variables which might be associated with dropping out. It is another matter, however, to obtain measures of these variables on a sufficiently large sample of students to enable the sorts of analyses which might confirm the hypothesized relationship, especially if the measures are from years ago, as in this study. For this purpose, well-documented longitudinal files must be devised and preserved. Not all of the files the authors sought in this study existed--a 1982-83 grade report file was never located, for example--but a sufficient number were accessible such that a large number of predictor variables could be assembled and tested.

Method

To develop a dropout prediction equation, a series of discriminant function and stepwise regression analyses were performed. The ninth-grade cohort selected for analysis (first-time ninth graders of 1983-84) was the first on which an entire history, from ninth grade through twelfth grade (and beyond), was available from the SSLF. At the time of analysis, the students' dropout status was known through the end of the 1987-88 school year, five years after the students began high school in grade 9.

Using SAS, a subfile containing only the 1983-84 ninth-grade cohort was created from the longitudinal dropout file. Students were selected for the file if they were first-time ninth graders in 1983-84; i.e., students who repeated ninth grade were excluded. A total of 4,461 students comprised the cohort. Students who died or transferred (because they could not properly be classified as either "dropouts" or "stay-ins") were removed prior to analysis, resulting in an analysis group of 3,944 students.

Information was added to the subfile throughout the year, enabling successive analyses to include more and more variables. Analysis thus proceeded in a step-by-step fashion. As additional information was added to the cohort subfile, additional variables were added to the discriminant function and stepwise regression analyses.

Variables

Independent prediction variables suggested in the research literature and by AISD administrators and interested citizens were identified. Many variables, such as age, ethnicity, achievement level, etc., were available on centrally maintained District computer files, but other variables, such as father's or mother's occupation or educational level, were not readily available and so were not included in these analyses.

The following 32 variables were ultimately assembled as potential predictors:

* Age
* Sex
* Ethnicity (5 variables)
* Low-income status (4 variables)
* Discipline incidents in 1982-83 (in grade 8)
* Texas Assessment of Basic Skills (TABS) Math raw score
* TABS Reading raw score
* TABS Writing raw score
* TABS Math mastery
* TABS Reading mastery
* TABS Writing mastery
* Iowa Tests of Basic Skills (ITBS) Reading Total grade equivalent (GE) score
* ITBS Math Total GE score
* ITBS Language Total GE score
* ITBS Work-Study Skills Total GE score
* ITBS Total Battery GE score
* New to the District in 1983-84
* Special education status
* Daily special education contact hours
* Limited-English-proficiency (LEP) status
* Years of service by Chapter 1
* Years of service by Chapter 1 Migrant
* Years of service by State Compensatory Education (SCE)
* Years identified as LEP
* Years in special education

An additional 38 variables were created by various combinations of the 32 variables. In all, 70 variables were utilized as independent predictors.

Attachment 2 contains a complete description of each of the variables used as predictors. All variables were recoded to numeric values.

It is evident from an inspection of the variables that not every variable which might have been of interest was used in the analyses. As mentioned previously, measures of some variables, such as parental occupation or educational status, could not be obtained without considerable time and effort,

which were beyond the resources of the project. Other variables--student grade point average (GPA) is the best example--could not be reconstructed from District data files. Some variables which occurred to the researchers, e.g., years served in a bilingual or English-as-a-second-language (ESL) program, percent attendance, and percent low income by attendance area, simply were not tried for lack of time. The end result was that the predictors employed were those which suggested themselves most immediately as related to dropping out and which could be obtained from extant files. Not surprisingly, the bulk of the predictors were achievement related. However, the use of another longitudinal file which contained multiyear information about service in a number of the District's significant compensatory programs gave the analyses greater scope.

The guiding principle behind the analyses was to attempt to build a prediction based only on what would have been known about these ninth-grade students upon their entry into high school. The reasoning was that prediction of the eventual dropout status of the current and future cohorts of ninth-grade students would be similarly constrained only to known information. One exception was made to this principle. The students' TABS scores were, in fact, from the spring of 1984, when the students had already been ninth graders for the greater part of a year. However, because the TABS was only administered to students in grades three, five, and nine, the alternative would have been to use scores from the 1979-80 administration of the TABS, when the students were fifth graders.

Results

Figure 1 shows results from representative analyses. As shown in the figure, the strength of association (canonical correlation), the "hits" and "misses," the prediction compared to chance, and the R square value all increased over the course of the analyses. Successive modifications were made which improved the prediction.

Summaries of all 16 analyses are Attachments 3 through 18. Highlights of individual analyses are discussed below in an attempt to convey to the reader the evolutionary nature of the study and the growing excitement for the authors as it unfolded.

Analysis #1

The first discriminant analysis used only four independent variables: age, low-income status, ethnicity, and sex. All variables but sex entered the model in the order listed. In this analysis, chance prediction for dropping out was taken as 50%, the reasoning being that a student would either drop out of school or stay in. The flaw in this reasoning was

rapidly apparent, and in all subsequent analyses "chance" was "set" to the actual percentage of dropouts in the population. This was accomplished by the SAS option "PRIORS." The percentage of dropouts correctly predicted, the "hits," was 40.5%, 9.5 percentage points below chance. In other words, better prediction of how many students would drop out could be effected by the flip of a coin. It was not an auspicious beginning, but it was a start.

Analysis #2

The second analysis was the same as the first with the exception of the alteration in the chance level described above. The result was a hit rate for dropouts just less than chance (-.1 percentage points). Age was again the strongest predictor, followed by low-income status, then ethnicity. As in the first analysis, sex did not enter the model as a significant predictor.

Analysis #3

The third analysis was a repetition of the previous two insofar as the same independent variables and the same chance level were applied. However, a different criterion classification was employed. In SAS, when the command "POOL = YES" is used, the measure of generalized squared distance is based on the pooled covariance matrix rather than on the individual within-group covariance matrices, and the discriminant function coefficients are printed. In this analysis, prediction of dropouts was worse than chance by 7.1 percentage points. Use of the pooled covariance matrix thus resulted in poorer prediction than in the previous two analyses. However, in SAS, no other options result in the printing of the discriminant function coefficients. Therefore, despite this disadvantage this option was selected in all subsequent analyses.

Analysis #4

A new independent variable was added to this analysis: the number of discipline incidents in which students had been involved as eighth graders. Prediction of dropouts improved only marginally, but was still worse than chance. Interestingly, number of discipline incidents proved to be a stronger predictor than any of the previously used predictors except age.

Analysis #5

Six new independent variables were added to this analysis: the raw scores on the Math, Reading, and Writing tests on the 1983-84 Texas Assessment of Basic Skills (TABS) administered to all ninth graders in the spring of 1984, and mastery status (mastered or not) on each of the three tests. All of

the new variables but two, TABS Reading mastery and Writing raw score, entered the model. For the first time, a variable replaced age as the strongest predictor. TABS Math raw emerged as the strongest predictor, followed by age, and, as before, by eighth-grade discipline incidents. Low-income status and ethnicity also were surpassed by TABS Reading raw score but exceeded TABS Writing and Math mastery. Also for the first time, prediction of dropouts ("hits") was better than chance, by a very slim .7 percentage points, but progress had been made.

Addition of the TABS variables pointed up another feature of SAS. Values for all variables must be present for an observation to be included in the analysis. In other words, observations (students) which did not have values for all variables were excluded from analysis. Consequently, the total number of students in this analysis declined from a constant 3,943 in Analyses #1 through #4 to 3,435.

Analysis #6

A twelfth independent variable was added to this analysis: whether a student was new to the District as a freshman in 1983-84. The result of this addition was a surprise: the same variables entered the model, in the same order. The new variable was constant (0) and was excluded from the analysis. The total N decreased to 3,110.

Upon investigation, it was determined that all of the records of students new to the district in 1983-84 were thrown out of the analysis because they had no discipline incidents in 1982-83 and consequently had missing values. This outcome was evident in hindsight. If a student was new to the District as a ninth grader in 1983-84, then the student could not have been involved in any disciplinary incidents as an eighth grader the year before.

To overcome this problem, eighth-grade discipline incidents for students new to the District were set equal to zero (0), rather than allowed to remain blank (missing data). In addition, if the student was not new to the District in 1983-84, but was not on the 1982-83 discipline file, then the student was treated as having no (coded 0) disciplinary incidents.

Analysis #7

With the new coding in place to eliminate the missing values problem caused by new ninth graders having no eighth-grade discipline records, this analysis saw the "new student" variable enter the model above low-income status. Prediction of dropouts, however, improved only slightly (+1.3 percentage points better than chance).

Analysis #8

Five additional independent variables were added to this analysis: grade equivalent scores on the Reading, Math, Language, Work-Study, and Total Battery Iowa Tests of Basic Skills (ITBS). The variable of being new to the District was removed from this analysis. The addition of the ITBS variables made an immediate impact. ITBS Work-Study Total GE emerged as the strongest predictor, and in what was becoming a familiar pattern, was followed by eighth-grade discipline incidents, TABS Reading raw score, and age. ITBS Reading Total GE and Math Total GE also entered the model as significant predictors above ethnicity and low-income status. ITBS Language Total GE and Total Battery GE did not enter the model. TABS Math raw score, the strongest predictor in Analysis #7, dropped to ninth in this analysis. Nonetheless, with 16 independent predictors, prediction of dropouts remained only barely better than chance (2.2 percentage points). The additional variables also decreased the overall N to 2,846.

Analysis #9

Eight new independent variables were added to this analysis: special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, and years in special education (same years). Four of the new variables entered the model and one, years LEP, replaced ITBS Work-Study Total GE (which dropped to second) as the strongest predictor. LEP status entered the model as the fifth strongest predictor, above ethnicity and TABS Math raw score. For the first time, low-income status did not enter the model. Prediction of dropouts surged to 19.6 percentage points better than chance, but the percentage of dropouts correctly predicted was still less than 50% (44.3%).

Analysis #10

To counteract the declining number of observations entering the analyses, it was decided to insert mean values in place of missing data on the TABS and ITBS achievement variables and on the discipline variable. This was accomplished by running a SAS univariate analysis on the selected variables to obtain means. Inserting the mean values in the analysis resulted in 14 of the 24 independent predictors entering the model, compared to 11 in Analysis #9. Interestingly, special education status and years in special education rose in importance among predictors. Contact hours in special education also entered the model for the first time, as did ITBS Total Battery GE. Low-income status reentered the model. Unfortunately, the cumulative strength of association and the prediction of dropouts relative to chance declined. However, the percentage of dropouts correctly predicted was

nearly 50% (49.6%) for the first time, and the number of observations in the analysis returned to its highest level, 3,943.

Analysis #11

In this analysis, certain categorical variables were recoded so that values of the variables were represented by separate, dichotomously coded (0 or 1) vectors. In previous analyses, ethnicity took three values. In this analysis, five ethnic categories, each dichotomously coded, were used. The low-income variable was likewise modified to produce four dichotomous variables: not low income, low income because of receiving a free meal, low income because of receiving a reduced-price meal, and low income because of having a sibling receiving a free or reduced-price meal. See the notes in Attachment 13. The "new to the District in 1983-84" variable, used in Analyses #6 and #7, was reintroduced.

By virtue of this recoding, 32 independent predictor variables were used in the analysis, 20 of which entered the model. For the first time, the percentage of dropout "hits" exceeded 50% (51.5%).

Analysis #12

In this analysis, different mean values were inserted in place of missing data on the TABS and ITBS variables and on the discipline variable. The rationale for the substitution was that while the insertion of mean values in place of missing values had been a step in the right direction, the use of separate means for the dropout and stay-in groups would better represent the differences between the groups on these variables than the overall mean. See the notes to Attachment 14. The coding for sex was changed from "1" (male) and "3" (female), as coded on the master student file, to "1" for males and "0" for females, a more appropriate dichotomous coding.

As a result of these modifications, dropout hits finally exceeded 50% by a notable 9.4 percentage points, and prediction of dropouts exceeded chance by 26.5 percentage points. In a parallel regression analysis, the same configuration of variables accounted for 41% of the variance.

Analysis #13

In this analysis, 13 interaction variables were introduced, for a total of 45 independent predictor variables. Likely interaction variables were selected based on their correlation with dropping out. Paired variables were selected if the first variable had a high correlation with dropping out and the second variable had a correlation with the first of at least .15 and less than .50. The interaction

variables used are listed in Attachment 15. Thirty variables entered the model. An interaction variable, TABS Math raw score by ITBS Work-Study Total GE was the strongest predictor, followed by years LEP, and age. Dropout hits rose to 69.4%, and prediction of dropouts bettered chance by 36.5 percentage points. In the regression analysis, 45% of the variance was accounted for.

Analysis #14

An additional 25 interaction variables were added into this analysis (see Attachment 16). Dropout hits rose to 70.3%, and dropout prediction was better than chance by 37.4 percentage points. After 14 analyses, with the use of 70 predictor variables on 3,944 cases, it was now possible to predict correctly in 7 out of 10 cases which students would drop out.

Analysis #15

In this analysis, all special education students were excluded. For the first time in the series of analyses, three variables initially entering the model were removed in later steps. A total of 35 variables, one half of the 70 used, entered the model. The strongest predictors were much the same as in Analysis #14. Dropout hits rose to 71.1%, and the prediction improved to 38.3 percentage points above chance.

Analysis #16 (The Ethnic Factor)

It was at this point--after months of labor, the introduction of dozens of predictor variables, and numerous zigs and zags in the analysis process--that inspiration struck one of the authors. Why not run separate analyses by ethnic group? Action followed inspiration, and an analysis was performed using the same 70 predictor variables as in Analysis #15. The results were dramatic and gratifying:

- o 100% prediction for American Indian students, for both the dropouts and the stay-ins,
- o 89.5% prediction of the Asian student dropouts, and 100% prediction of the stay-ins, and
- o 67.5%, 71.0%, and 79.4% dropout prediction for white, black, and Hispanic students, respectively.

Most interestingly, different variables entered the model for the different ethnicities. See Attachment 18. This outcome established that the importance of various variables differs according to ethnic group. For instance, mastery of the TABS Math test was the sole variable necessary to differentiate between dropouts and stay-ins among American Indians, but this variable did not even enter the model when applied to the group of all students. Therefore, it follows that a

single prediction equation for all students is less efficient than predicting within ethnic group.

This finding was something of a dilemma. While separate equations promised more efficient prediction of dropouts, they are more time consuming and expensive to perform. Therefore, it was decided to pursue the set of predictor variables which would yield the best prediction equation for all students, and when that set was obtained then to fine tune the prediction by again performing separate analyses by ethnic group.

Discussion

Although Analysis #16 was not the last analysis (subsequent analyses with all students have improved on Analysis #15), this was the most major of a number of "breakthroughs" which moved the authors closer to their goal of correctly identifying the students most at risk of dropping out.

This study suggests that ethnicity is an extremely important factor to consider in efforts to predict which students will drop out over their high school careers. It has long been known that minority students drop out in numbers disproportionate to their presence in the general student population. It should be emphasized, however, that in this study ethnicity by itself was a less significant predictor than many other variables. However, it appears to interact with other significant predictors to such an extent that a single overall prediction equation for students of all ethnicities is less effective than separate prediction equations. The implication of this finding for educational practitioners is that, in considering interventions for students at risk of dropping out, the interaction of ethnicity with other variables must be considered, rather than ethnicity alone.

Several other outcomes are clear from these analyses. In our District, at least, sex is not a significant predictor of whether or not a student will drop out. Age, on the other hand, is consistently associated with dropping out. The older the student is in relation to his grade-level peers, the greater the likelihood the student will drop out. Another important predictor of dropping out in this study is the number of years the student is LEP. The longer the student is classified as LEP, the greater the chances of the student dropping out. Grade equivalent score on the ITBS Work-Study Skills Test was consistently one of the strongest predictors in the later analyses. The higher the score, the more likely the student would stay in school. This finding suggests that study skills, such as using a dictionary, using an index, map reading, etc., may be at least as important as reading and mathematics skills for students to stay in school.

This study also reaffirms that significant prediction can be achieved solely on the basis of information school districts are likely to have readily accessible (see Curtis, Doss, MacDonald, & Davis, 1983). While it is undoubtedly desirable to be able to factor in information about students' families and other background, it is not essential to develop good prediction.

Finally, although discriminant analysis is not a new methodology, even as applied to dropout prediction, the capability to predict correctly which students are likely to drop out of school is critical if dropout prevention efforts are to be effective. In the absence of reliable predictive information, district resources will not be effectively targeted, and the dropout problem will continue to waste district and community resources.

Limitations of the Study

1. Not all variables have been tried.

As has already been mentioned, not all of the variables that might be associated with dropping out were included in the analyses. It is quite possible, therefore, that just as certain variables which seemed useful as predictors in the early analyses were displaced in later analyses by other variables, there may be variables which have not yet been tried which would supersede some of the variables which currently seem to be the best predictors of dropping out. This possibility seems more likely in view of the fact that in the best of the analyses, the variables used accounted for less than 50% of the variance. Chief among the variables we would like to have tried is GPA, although because of multicollinearity it might not have proved a stronger predictor than the other achievement measures already in the equation.

2. The research program was somewhat unstructured.

The fact that there are variables yet to be tried as predictors underscores the evolutionary, rather than preplanned, nature of the analyses in this study. Although experimental findings are sometimes written up as if they occurred in a logical, step-by-step fashion, without any missteps or errors in judgement along the way, most researchers would admit that things are not always as tidy as their write-ups might make them appear. We have attempted to portray the process as it occurred, warts and all. Nonetheless, we must admit the possibility that a more disciplined, structured research program may have served to advance us further toward our goal than our let's-see-what-we-can-add-in-next approach. However, we opted not to forgo the pleasure and stimulation of discovering new things along the way, so we must be content with the outcome.

3. The discriminant function equation has not yet been cross validated.

This is a task which we envisioned as occurring in what is now a rapidly dwindling year. At this time, the plan is to apply the equation to the cohort of 1984-85 first-time ninth graders, and conversely to apply the equation to be developed on this cohort to the cohort of 1983-84 first-time ninth graders.

4. The findings of the study may not be generalizable.

The equation we developed is specific to students in the Austin Public Schools and may not generalize to other school districts which have different student populations. Not all districts are large and urban, nor do they have as large an Hispanic population. We urge other researchers who are interested in dropout prediction to perform the same sorts of analyses in their own districts, perhaps using some of the same variables.

If anyone is interested in replicating any part of this study, we would be glad to supply details of our work which we could not discuss fully in this paper. We would also like to hear from anyone who is doing similar work. Please contact us at the address or telephone number given on page 2.

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Figure 1

Representative Discriminant Analyses on the 1983-84 Cohort of First-Time Ninth Graders

	#1	#5	#8	#9	#11	#12	#13	#15			#16			#18
Strength of Association	.099	.142	.158	.348	.320	.365	.437	.465	1.000	.744	.408	.409	.474	
"Hits"														
Dropouts	40.5%	28.0%	26.9%	44.3%	51.6%	59.4%	69.4%	71.1%	100.0%	89.5%	71.0%	79.4%	67.1%	75.4%
Stay-ins	83.2%	93.4%	93.8%	95.3%	92.8%	92.0%	92.0%	91.5%	100.0%	100.0%	87.9%	84.9%	94.7%	92.7%
Overall	69.2%	75.5%	77.3%	82.7%	78.9%	81.3%	84.1%	85.1%	100.0%	97.5%	81.9%	82.3%	87.4%	87.5%
"Misses"														
Dropouts	59.5%	72.0%	73.2%	55.7%	48.5%	40.6%	30.6%	29.0%	0%	10.5%	29.0%	20.7%	32.9%	24.6%
Stay-ins	16.8%	6.7%	6.2%	4.7%	7.7%	8.0%	8.6%	8.1%	0%	0%	12.1%	15.1%	5.3%	7.3%
Overall	30.8%	24.5%	22.7%	17.3%	21.1%	18.7%	15.9%	14.9%	0%	2.5%	18.1%	17.6%	12.6%	12.5%
Prediction Compared to Chance	Worse by 9.5%	Better by .7%	Better by 2.2%	Better by 19.6%	Better by 18.6%	Better by 26.5%	Better by 36.5%	Better by 38.3%	Better by 57.1%	Better by 13.2%	Better by 6.4%	Better by 24.6%	Better by 6.5%	Better by 45.4%
R-Square	--*	--	--	--	.363	.407	.449	.468	1.000	.802	.429	.428	.484	.494
Number of Variables	4	11	16	24	32	32	45	70	70	70	70	70	70	45
Notes		CRT Achievement Scores	NRT Achievement Scores	Comp. Ed./ Sp. Ed. history		Mean value for missing data, by group	Interaction variables	Special Ed. students excluded; additional interaction variables	Separate analyses by ethnicity					

*"--" = NOT AVAILABLE

```
 ************** SSLF LONGITUDINAL DROPOUT FILE ***************
UCC.EDPDROPL(0)              SECONDARY STUDENT LONGITUDINAL FILE (SSLF)
                             GRADES 7-12
UCC.EDPDROPL.BKUP1289(0)     BACKUP OF ABOVE

 SSLF TAPE LAYOUT:
 DATA SSLF;
    INFILE TAPEIN;
    INPUT          STUID          1-7
                   STUNAME      $ 8-34
                   BIRTH          35-40
                   SEX          $ 41
                   ETHNIC       $ 42
                   FIRST9TH       43-44
                   FIRST7TH       45-46

                   GRADE84      $ 51-52
                   LOC84        $ 53-55
                   ENTRY84        56-61
                   WITH84         62-67
                   TRANS84      $ 68
                   LISTAT84     $ 69
                   DROP84         70

                   GRADE85      $ 76-77
                   LOC85        $ 78-80
                   ENTRY85        81-86
                   WITH85         87-92
                   TRANS85      $ 93
                   LISTAT85     $ 94
                   DROP85         95

                   GRADE86      $ 101-102
                   LOC86        $ 103-105
                   ENTRY86        106-111
                   WITH86         112-117
                   TRANS86      $ 118
                   LISTAT86     $ 119
                   DROP86         120

                   GRADE87      $ 126-127
                   LOC87          128-130
                   ENTRY87        131-136
                   WITH87         137-142
                   TRANS87      $ 143
                   LISTAT87     $ 144
                   DROP87         145

                   GRADE88      $ 151-152
                   LOC88          153-155
                   ENTRY88        156-161
                   WITH88         162-167
                   TRANS88      $ 168
                   LISTAT88     $ 169
                   DROP88         170

                   GRADE89      $ 176-177
                   LOC89        $ 178-180
                   ENTRY89        181-186
                   WITH89         187-192
                   TRANS89      $ 193
                   LISTAT89     $ 194
                   DROP89         195

                   GRADE90      $ 201-202
                   LOC90        $ 203-205
                   ENTRY90        206-211
                   WITH90         212-217
                   TRANS90      $ 218
                   LISTAT90     $ 219
                   DROP90         220   ;
```

List of Independent Predictor Variables Used in Discriminant Function Analyses

Main Variables (32)

1. Age
2. Low income, free meal
3. Low income, reduced-price meal
4. Low income, sibling
5. Not low income
6. Ethnicity, American Indian
7. Ethnicity, Asian
8. Ethnicity, Black
9. Ethnicity, Hispanic
10. Ethnicity, White
11. Sex
12. 1982-83 discipline incidents
13. 1983-84 TABS Math raw score
14. 1983-84 TABS Math mastery
15. 1983-84 TABS Reading raw score
16. 1983-84 TABS Reading mastery
17. 1983-84 TABS Writing raw score
18. 1983-84 TABS Writing mastery
19. New to District in 1983-84
20. 1982-83 ITBS Reading Total grade equivalent (GE) score
21. 1982-83 ITBS Math Total GE
22. 1982-83 ITBS Language Total GE
23. 1982-83 ITBS Work-Study Skills Total GE
24. 1982-83 ITBS Total Battery GE
25. Special education status
26. Special education contact hours per day
27. LEP status
28. Years in Chapter 1 (1979-80 through 1982-83)
29. Years in Chapter 1 Migrant (1979-80 through 1982-83)
30. Years in SCE (1979-80 through 1982-83)
31. Years LEP (1979-80 through 1982-83)
32. Years in special education (1979-80 through 1982-83)

Interaction Variables (38)

33. Age by ITBS Work-Study Skills Total GE
34. Age by LEP status
35. Age by years LEP
36. Years LEP by Hispanic
37. Years LEP by Black
38. Years LEP by years in Chapter 1
39. Years LEP by years in SCE
40. 1983-84 TABS Math raw score by Hispanic

List of Independent Predictor Variables (cont.)

41. 1983-84 TABS Math raw score by ITBS Work-Study Skills Total GE
42. 1983-84 TABS Math raw score by years in Chapter 1
43. 1983-84 TABS Reading raw score by ITBS Work-Study Skills Total GE
44. LEP status by Hispanic
45. Special education status by new to District in 1983-84
46. 1982-83 ITBS Work-Study Skills Total GE by 1982-83 discipline incidents
47. 1983-84 TABS Math raw score by not low income
48. 1983-84 TABS Math raw score by age
49. 1983-84 TABS Math raw score by 1982-83 discipline incidents
50. Age by new to District in 1983-84
51. Age by Hispanic
52. Hispanic by years in Chapter 1
53. White by not low income
54. White by low income (free)
55. White by 1982-83 discipline incidents
56. 1983-84 TABS Math raw score by White
57. 1982-83 ITBS Work Study Skills Total GE by not low income
58. 1982-83 ITBS Work-Study Skills Total GE by special education status
59. 1982-83 ITBS Work-Study Skills Total GE by years in Chapter 1
60. 1982-83 ITBS Work-Study Skills Total GE by LEP status
61. Years LEP by years in Chapter 1 Migrant
62. 1982-83 ITBS Work-Study Skills Total GE by ethnicity (Hispanic)
63. Ethnicity (White by years in Chapter 1
64. 1982-83 ITBS Work Study Skills Total GE by ethnicity (Hispanic)
65. Ethnicity (Hispanic) by years in Chapter 1 Migrant
66. New to District in 1983-84 by years in Chapter 1
67. Ethnicity (Black) by 1982-83 discipline incidents
68. 1983-84 TABS Math raw score by Black
69. New to District in 1983-84 by years LEP
70. 1983-84 TABS Math raw score by LEP status

DISCRIMINANT ANALYSIS #1

Variables: Age, low-income status, ethnicity, sex

Run date: 1/10/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): Age, low-income status, ethnicity

Strength of Association (1.0 = perfect prediction):

Age	.079
Low-income Status	.097
Ethnicity	.099

	HITS	MISSES	TOTAL
Dropouts	525 (40.5%)	771 (59.5%)	1296
Graduates	2202 (83.2%)	445 (16.8%)	2647
	2727	1216	3943
	69.2%	30.8%	

Chance vs. actual prediction for dropouts: 50.0% vs. 40.5%

PREDICTION OF DROPOUTS IS WORSE THAN CHANCE BY 9.5%.

DiscAnal/1-18-89

DISCRIMINANT ANALYSIS #2

Variables: Age, low-income status, ethnicity, sex

Run date: 1/10/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): Age, low-income status, ethnicity

Strength of Association (1.0 = perfect prediction):

Age	.079
Low-income Status	.097
Ethnicity	.099

	HITS	MISSES	TOTAL
Dropouts	428 (33.0%)	868 (67.0%)	1296
Graduates	2357 (89.0%)	290 (11.0%)	2647
	2785	1158	3943
	70.6%	29.4%	

Chance vs. actual prediction for dropouts: 32.9% vs. 33.0%

PREDICTION OF DROPOUTS IS WORSE THAN CHANCE BY .1%.

DISCRIMINANT ANALYSIS #3

Variables: Age, low-income status, ethnicity, sex

Run date: 1/23/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): Age, low-income status, ethnicity

Strength of Association (1.0 = perfect prediction):

Age	.079
Low-income Status	.097
Ethnicity	.099

	HITS	MISSES	TOTAL
Dropouts	334 (25.8%)	962 (74.2%)	1296
Graduates	2462 (93.0%)	185 (7.0%)	2647
	2796	1147	3943
	70.9%	29.1%	

Chance vs. actual prediction for dropouts: 32.9% vs. 25.8%

PREDICTION OF DROPOUTS IS WORSE THAN CHANCE BY 7.1%.

(Differs from Discriminant Analysis #2 by use of a different classification criterion)

DiscAnal/1-24-89

DISCRIMINANT ANALYSIS #4

Variables: Age, low-income status, ethnicity, sex, 1982-83 discipline incidents

Run date: 1/24/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): Age, 1982-83 discipline incidents, low-income status, ethnicity

Strength of Association (1.0 = perfect prediction):

Age	.079
1982-83 Discipline Incidents	.105
Low-income Status	.118
Ethnicity	.119

	HITS	MISSES	TOTAL
Dropouts	364 (28.1%)	932 (71.9%)	1296
Graduates	2484 (93.8%)	163 (6.2%)	2647
	2848	1095	3943
	72.2%	27.7%	

Chance vs. actual prediction for dropouts: 32.9% vs. 28.1%

PREDICTION OF DROPOUTS IS WORSE THAN CHANCE BY 4.8%.

DiscAnal/1-25-89
DW:dc

DISCRIMINANT ANALYSIS #5

Variables: Age, low-income status, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS Writing mastery (11)

Run date: 1/25/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math raw score, Age, 1982-83 discipline incidents, TABS Reading raw score, low-income status, ethnicity, TABS Writing mastery, TABS Math mastery (8)

Variables Not Entering the Model: Sex, TABS Reading mastery, TABS Writing raw score

Strength of Association (1.0 = perfect prediction):

1983-84 TABS Math Raw Score	.096
Age	.115
1982-83 Discipline Incidents	.127
1983-84 TABS Reading Raw Score	.133
Low-income Status	.136
Ethnicity	.138
1983-84 TABS Writing Mastery	.140
1983-84 TABS Math Mastery	.142 (cumulative)

	HITS	MISSES	TOTAL
Dropouts	262 (28.0%)	675 (72.0%)	937
Graduates	2332 (93.4%)	166 (6.7%)	2498
	2594	841	3435
	75.5%	24.5%	

Chance vs. actual prediction for dropouts: 27.3% vs. 28.0%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY .7%.

DiscAnal/2-1-89
DW:dc

DISCRIMINANT ANALYSIS #6

Variables: Age, low-income status, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS Writing mastery, new to District in 1983-84 (12)

Run date: 2/2/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math raw score, 1982-83 discipline incidents, age, TABS Reading raw score, low-income status, ethnicity, TABS Math mastery, TABS Writing mastery (8)

Variables Not Entering the Model: Sex, TABS Reading mastery, TABS Writing raw score (3)

The variable new to District in 1983-84 was constant (Ø) and was excluded from the analysis.

Strength of Association (1.0 = perfect prediction):

1983-84 TABS Math Raw Score	.100	
1982-83 Discipline Incidents	.118	
Age	.128	
1983-84 TABS Reading Raw Score	.134	
Low-income Status	.137	
Ethnicity	.139	
1983-84 TABS Math Mastery	.141	
1983-84 TABS Writing Mastery	.142	(cumulative)

	HITS	MISSES	TOTAL
Dropouts	227 (27.6%)	596 (72.4%)	823
Graduates	2142 (93.7%)	145 (6.3%)	2287
	2369	741	3110
	76.2%	23.8%	

Chance vs. actual prediction for dropouts: 26.5% vs. 27.6%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 1.1%.

DiscAnal/2-13-89
DW:dc

DISCRIMINANT ANALYSIS #7

Variables: Age, low-income status, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS Writing mastery, new to District in 1983-84 (12)

Run date: 2/10/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math raw score, age, 1982-83 discipline incidents, TABS Reading raw score, new to District in 1983-84, low-income status, TABS Writing mastery, TABS Math mastery, ethnicity (9)

Variables Not Entering the Model: Sex, TABS Reading mastery, TABS Writing raw score (3)

Strength of Association (1.0 = perfect prediction):

1983-84 TABS Math Raw Score	.096
Age	.115
1982-83 Discipline Incidents	.127
1983-84 TABS Reading Raw Score	.133
New to District in 1983-84	.138
Low-income Status	.141
1983-84 TABS Writing Mastery	.142
1983-84 TABS Math Mastery	.144
Ethnicity	.146 (cumulative)

	HITS	MISSES	TOTAL
Dropouts	268 (28.6%)	669 (72.0%)	937
Graduates	2337 (93.6%)	161 (6.7%)	2498
	2605	830	3435
	75.8%	24.2%	

Chance vs. actual prediction for dropouts: 27.3% vs. 28.6%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 1.3%.

(Differs from Discriminant Analysis #6 by setting 1982-83 discipline incidents for students new to the District in 1983-84 equal to zero, rather than blank)

DiscAnal/2-13-89
DW:dc

DISCRIMINANT ANALYSIS #8

Variables: Age, low-income status, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS Writing mastery, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE (16)

Run date: 2/14/89

Program: PS$04225

Variables Selected for Entry into Model ($\alpha < .15$): 1982-83 ITBS Work-Study Total GE, 1982-83 discipline incidents, 1983-84 TABS Reading raw score, age, 1982-83 ITBS Reading Total GE, 1982-83 ITBS Math Total GE, ethnicity low-income status, 1983-84 TABS Math raw score, 1983-84 TABS Writing mastery, 1983-84 TABS Math mastery (11)

Variables Not Entering the Model: Sex, TABS Reading mastery, TABS Writing raw score, ITBS Language Total GE, ITBS Total Battery GE (5)

Strength of Association (1.0 = perfect prediction):

1982-83 ITBS Work-Study Total GE	.110
1982-83 Discipline Incidents	.130
1983-84 TABS Reading Raw Score	.138
Age	.142
1982-83 ITBS Reading Total GE	.146
1982-83 ITBS Math Total GE	.149
Ethnicity	.151
Low-income Status	.154
1983-84 TABS Math Raw Score	.155
1983-84 TABS Writing Mastery	.157
1983-84 TABS Math Mastery	.158 (cumulative)

	HITS	MISSES	TOTAL
Dropouts	189 (26.9%)	515 (73.2%)	704
Graduates	2010 (93.8%)	132 (6.2%)	2142
	2199	647	2846
	77.3%	22.7%	

Chance vs. actual prediction for dropouts: 24.7% vs. 26.9%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 2.2%.

DiscAnal/2-17-89
DW:dc

DISCRIMINANT ANALYSIS #9

Independent Variables: Age, low-income status in 1983-84, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (24)

Run date: 5/18/89

Program: DW$D8384

Variables Selected for Entry into Model ($\alpha \leq .15$): Years LEP, 1982-83 ITBS Work-Study Total GE, age, 1982-83 discipline incidents, LEP status, ethnicity, 1983-84 TABS Math raw score, special education status, 1982-83 ITBS Reading Total GE, 1983-84 TABS Reading raw score, years in special education (11)

Variables Not Entering the Model: Low-income status in 1983-84, sex, TABS Math mastery, TABS Reading mastery, TABS Writing raw score, TABS Writing mastery, ITBS Math Total GE, ITBS Language Total GE, ITBS Total Battery GE, special education contact hours per day, years in Chapter 1, years in Chapter 1 Migrant, years in SCE (13)

Strength of Association (1.0 = perfect prediction):

1.	Years LEP (1979-80 - 1982-83)	.267
2.	1982-83 ITBS Work-Study Total GE	.306
3.	Age	.322
4.	1982-83 Discipline Incidents	.331
5.	LEP Status	.335
6.	Ethnicity	.338
7.	1983-84 TABS Math Raw Score	.341
8.	Special Education Status	.343
9.	1982-83 ITBS Reading Total GE	.345
10.	1983-84 TABS Reading Raw Score	.346
11.	Years in Special Education	.348 (cumulative)

	HITS	MISSES	TOTAL
Dropouts	312 (44.3%)	392 (55.7%)	704
Graduates	2041 (95.3%)	101 (4.7%)	2142
	2353	493	2846
	82.7%	17.3%	

Chance vs. actual prediction for dropouts: 24.7% vs. 44.3%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 19.6%.

DiscAnal/5-19-89
DW:dc

DISCRIMINANT ANALYSIS #10

Independent Variables: Age, low-income status in 1983-84, ethnicity, sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (24)

Run date: 5/18/89

Program: DW$D8384

Variables Selected for Entry into Model ($\alpha < .15$): Years LEP, age, 1982-83 ITBS Work-Study Total GE, 1982-83 discipline incidents, special education status, 1983-84 TABS Math raw score, years in special education, LEP status, ethnicity, contact hours per day in special education, low-income status, 1983-84 TABS Writing raw score, 1982-83 ITBS Total Battery GE, 1982-83 ITBS Math Total GE (14)

Variables Not Entering the Model: Sex, TABS Math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing mastery, ITBS Reading Total GE, ITBS Language Total GE, years in Chapter 1 (1979-80 - 1982-83), years in Chapter 1 Migrant, years in SCE (same years) (10)

Strength of Association (1.0 = perfect prediction):

1.	Years LEP (1979-80 - 1982-83)	.145
2.	Age	.241
3.	1982-83 ITBS Work-Study Total GE	.261
4.	1982-83 Discipline Incidents	.271
5.	Special Education Status	.276
6.	1983-84 TABS Math Raw Score	.280
7.	Years in Special Education	.282
8.	LEP Status	.285
9.	Ethnicity	.287
10.	Contact Hours Per Day in Special Education	.289
11.	Low-income Status	.291
12.	1983-84 TABS Writing Raw Score	.292
13.	1982-83 ITBS Total Battery GE	.293
14.	1982-83 ITBS Math Total GE	.294 (cumulative)

	HITS	MISSES	TOTAL
Dropouts	643 (49.6%)	653 (50.4%)	1296
Graduates	2455 (92.8%)	192 (7.3%)	2647
	3098	845	3943
	78.6%	21.4%	

Chance vs. actual prediction for dropouts: 32.9% vs. 49.6%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 16.7%.

(Differs from Discriminant Analysis #9 by the insertion of mean values in place of missing data on TABS and ITBS achievement variables and on the discipline variable)

DISCRIMINANT ANALYSIS #11

Analysis Group: First-Time Ninth Graders of 1983-84 (N=4,641*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)

Run date: 5/24/89

Program: DW$D8384

Variables Selected for Entry into Model ($\alpha < .15$): Years LEP, age, 1982-83 ITBS Work-Study Total GE, new to District in 1983-84, 1982-83 discipline incidents, low income (sibling), 1983-84 TABS Math raw score, ethnicity (white), special education status, years in special education, contact hours per day in special education, LEP status, 1983-84 TABS Writing raw score, 1982-83 ITBS Total Battery GE, ethnicity (American Indian), ethnicity (Asian), not low income, 1983-84 TABS Reading raw score, 1982-83 ITBS Math Total GE, 1983-84 TABS Reading mastery (20)

Variables Not Entering the Model: Low income (free), low income (reduced), ethnicity (Black), ethnicity (Hispanic), sex, TABS Math mastery, TABS Writing mastery, ITBS Reading Total GE, ITBS Language Total GE, years in Chapter 1 (1979-80 - 1982-83), years in Chapter 1 Migrant, years in SCE (same years) (12)

Strength of Association (1.0 = perfect prediction):

1.	Years LEP (1979-80 - 1982-83)	.145
2.	Age	.241
3.	1982-83 ITBS Work-Study Total GE	.261
4.	New to District in 1983-84	.280
5.	1982-83 Discipline Incidents	.294
6.	Low Income, Sibling	.299
7.	1983-84 TABS Math Raw Score	.302
8.	Ethnicity, White	.306
9.	Special Education Status	.309
10.	Years in Special Education	.312
11.	Contact Hours Per Day in Special Education	.314
12.	LEP Status	.315
13.	1983-84 TABS Writing Raw Score	.316
14.	1982-83 ITBS Total Battery GE	.317
15.	Ethnicity, American Indian	.318
16.	Ethnicity, Asian	.318
17.	Not Low Income	.319
18.	1983-84 TABS Reading Raw Score	.319
19.	1982-83 ITBS Math Total GE	.320
20.	1983-84 TABS Reading Mastery	.320 (cumulative)

* When students who died or transferred are removed, N = 3,944.

DISCRIMINANT ANALYSIS #11 (cont.)

	HITS	MISSES	TOTAL
Dropouts	667 (51.5%)	629 (48.5%)	1296
Graduates	2444 (92.8%)	203 (7.7%)	2647
	3111	832	3943
	78.9%	21.1%	

Chance vs. actual prediction for dropouts: 32.9% vs. 51.5%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 18.6%.

Notes:

1. Discriminant Analysis #11 differs from Discriminant Analysis #10 by the recoding of certain categorical variables so that values of the variables are represented by separate, dichotomously coded (Ø or 1) vectors. In previous analyses, ethnicity took three values--3, 4, or 5. In this analysis all five ethnic categories have been used, and each is dichotomously coded. The low-income variable (formerly 0-3) was likewise modified to produce four dichotomous variables: not low income, low income because of receiving a free meal, low income because of receiving a reduced-price meal, and low income because of having a sibling receiving a free or reduced-price meal.

2. As on Discriminant Analysis #10, mean values were inserted in place of missing data on the TABS and ITBS variables and on the discipline variable. By this procedure, 1,098 observations were included which had previously been excluded.

3. The variable "new to District in 1983-84," used in Discriminant Analyses #6 and #7 was reintroduced. The variable "1982-83 discipline incidents" was set to zero for students who were not new but who were not on the discipline file. For new students in 1983-84, the mean value for discipline incidents was used.

DiscAnal/5-25-89
DW:dc

DISCRIMINANT ANALYSIS #12

Analysis Group: First-Time Ninth Graders of 1983-84 (N=4,641*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)

Run date: 6/22/89

Program: DW$D834R

Variables Selected for Entry into Model ($\alpha < .15$): 1982-83 ITBS Work-Study Total GE, Years LEP, age, new to District in 1983-84, 1982-83 discipline incidents, ethnicity (white), 1983-84 TABS Math raw score, special education status, low income (sibling), contact hours per day in special education, years in special education, LEP status, not low income, 1983-84 TABS Writing mastery, ethnicity (American Indian), years in SCE, 1982-83 ITBS Math Total GE, 1983-84 TABS Reading raw score, 1982-83 ITBS Reading Total GE (19)

Variables Not Entering the Model: Low income (free), low income (reduced), ethnicity (Black), ethnicity (Hispanic), ethnicity (Asian), sex, TABS Math mastery, TABS Reading mastery, TABS Writing raw score, ITBS Language Total GE, ITBS Total Battery GE, years in Chapter 1 (1979-80 - 1982-83), years in Chapter 1 Migrant (same years) (13)

Strength of Association (1.0 = perfect prediction):

1.	1982-83 ITBS Work-Study Total GE	.167
2.	Years LEP (1979-80 - 1982-83)	.250
3.	Age	.301
4.	New to District in 1983-84	.318
5.	1982-83 Discipline Incidents	.334
6.	Ethnicity, White	.340
7.	1983-84 TABS Math Raw Score	.345
8.	Special Education Status	.350
9.	Low Income, Sibling	.355
10.	Contact Hours Per Day in Special Education	.357
11.	Years in Special Education	.359
12.	LEP Status	.361
13.	Not Low Income	.362
14.	1983-84 TABS Writing Mastery	.363
15.	Ethnicity, American Indian	.363
16.	Years in State Compensatory Education	.364
17.	1982-83 ITBS Math Total GE	.364
18.	1983-84 TABS Reading Raw Score	.365
19.	1982-83 ITBS Reading Total GE	.365 (cumulative)

* When students who died or transferred are removed, N=3,944.

DISCRIMINANT ANALYSIS #12 (cont.)

	HITS	MISSES	TOTAL
Dropouts	770 (59.4%)	526 (40.6%)	1296
Stay-Ins	2436 (92.0%)	211 (8.0%)	2647
	3206	737	3943
	81.3%	18.7%	

Chance vs. actual prediction for dropouts: 32.9% vs. 59.4%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 26.5%.

Notes:

1. Discriminant Analysis #12 differs from Discriminant Analysis #11 by the insertion of different mean values in place of missing data on the TABS and ITBS variables and on the discipline variable (12 variables altogether). In Discriminant Analyses #10 and #11, the overall mean for each of the variables was inserted in place of missing values (1,098 in all). In Discriminant Analysis #12, two mean values for each variable were used, one for cases in the dropout group and another for cases in the stay-in group. Cases with missing values received the mean appropriate to their group. In other words, if data were missing on a variable for a particular student who dropped out, the mean for dropouts on that variable was inserted in place of the missing information. If data were missing on a variable for a student who stayed in school, the mean for stay-ins on that variable was inserted.

2. The variable "new to District in 1983-84," used in Discriminant Analyses #6 , #7 and #11, was used again. As in Discriminant Analysis #11, the variable "1982-83 discipline incidents" was set to zero for students who were not new but who were not on the discipline file. For new students in 1983-84, the appropriate mean values for discipline incidents--the mean for dropouts or the mean for stay-ins--were used.

3. As in Discriminant Analysis #11, all five ethnic categories have been used, and each is dichotomously coded. The low-income variable modified to produce four dichotomous variables was likewise reused. The coding for sex was changed. In previous analyses, sex was dichotomously coded--'1' (male) and '3' (female). In this analysis sex has been recoded to '1' for males and '0' for females.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (43): Same as in discriminant analysis, plus the interactions (6) of "TABS Math raw score" with the ethnic variables and "LEP status," and the interactions (5) of "years LEP" with the ethnic variables

R-Square: 0.407188 (41% VARIANCE ACCOUNTED FOR)

DISCRIMINANT ANALYSIS #13

Analysis Group: First-Time Ninth Graders of 1983-84 (N=4,641*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper I, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84 (13) ((45))

Run date: 6/26/89

Program: DW$D834R

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math raw score by 1982-83 ITBS Work-Study Skills Total GE, years LEP, age, years LEP by ethnicity (Hispanic), new to District in 1983-84, 1982-83 discipline incidents, years LEP by ethnicity (Black), age by years LEP, special education status, low income (sibling), years LEP by years in Chapter 1 (1979-80 - 1982-83), 1983-84 TABS Math raw score by years in Chapter 1, ethnicity (Black), age by LEP status, LEP status by ethnicity (Hispanic), contact hours per day in special education, 1983-84 TABS Reading mastery, years in special education, years LEP and years in SCE, years in SCE, not low income, age by 1982-83 ITBS Work-Study Skills Total GE, 1982-83 ITBS Work-Study Skills Total GE, LEP status, 1983-84 TABS Writing mastery, special education status by new to District in 1983-84, years in Chapter 1 Migrant, 1983-84 TABS Math raw score, ethnicity (white), ethnicity (American Indian) (30)

Variables Not Entering the Model: Low income (free), low income (reduced), ethnicity (Hispanic), ethnicity (Asian), sex, 1983-84 TABS Math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, 1982-83 ITBS Reading Total GE score, ITBS Math Total GE score, ITBS Language Total GE, ITBS Total Battery GE, years in Chapter 1 (1979-80 - 1982-83), years in Chapter 1 Migrant (same years) (15)

* When students who died or transferred are removed, N=3,944.

DISCRIMINANT ANALYSIS #13 (cont.)

Strength of Association (1.0 = perfect prediction):			Correlation with Dropping Out
1.	TABS Math Raw Score by ITBS Work-Study Total GE	.180	- .425
2.	Years LEP (1979-80 - 1982-83)	.260	.381
3.	Age	.306	.282
4.	Years LEP by Ethnicity, Hispanic	.336	.236
5.	New to District in 1983-84	.355	.116
6.	1982-83 Discipline Incidents	.370	.238
7.	Years LEP by Ethnicity, Black	.380	.155
8.	Age by Years LEP	.387	.380
9.	Special Education Status	.393	.002
10.	Low Income, Sibling	.396	.162
11.	Years LEP by Years in Chapter 1	.400	.175
12.	TABS Math Raw Score by Years in Chapter 1	.408	.205
13.	Ethnicity, Black	.412	.025
14.	Age by LEP Status	.414	.027
15.	LEP Status by Ethnicity, Hispanic	.417	.051
16.	Contact Hours Per Day in Special Education	.418	.012
17.	1983-84 TABS Reading Mastery	.420	.248
18.	Years in Special Education (1979-80 - 1982-83)	.421	.117
19.	Years LEP by Years in SCE	.422	.066
20.	Years in SCE (1979-80 - 1982-83)	.423	.090
21.	Not Low Income	.424	- .148
22.	Age by 1982-83 ITBS Work-Study Skills Total GE	.425	- .373
23.	1982-83 ITBS Work-Study Skills Total GE	.432	- .409
24.	LEP Status	.434	.025
25.	1983-84 TABS Writing Mastery	.435	.220
26.	Special Education by New to District in 1983-84	.435	.032
27.	Years in Chapter 1 Migrant (1979-80 - 1982-83)	.436	.080
28.	1983-84 TABS Math Raw Score	.436	- .356
29.	Ethnicity, White	.437	- .149
30.	Ethnicity, American Indian	.437 (cumulative)	.022

	HITS	MISSES	TOTAL
Dropouts	899 (69.4%)	397 (30.6%)	1296
Stay-Ins	2419 (92.0%)	228 (8.6%)	2647
	3318	625	3943
	84.1%	15.9%	

Chance vs. actual prediction for dropouts: 32.9% vs. 69.4%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 36.5%.

DISCRIMINANT ANALYSIS #13 (cont.)

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (75): Same as in the discriminant analysis, plus the interactions (4) of "TABS Math raw score" with the ethnic variables other than Hispanic, and with "LEP status," "not low income," age, and discipline (4); "years LEP" with the other ethnic variables (3); "ITBS Work-Study Total GE" with discipline, Hispanic, "not low income," special education, "years in Chapter 1," "LEP status," and "years in special education" (7); age with "new to District in 1983-84" and Hispanic (2); Hispanic with "years in Chapter 1" and "years in Chapter 1 Migrant" (2); white with "not low income," free lunch, discipline, and "years in Chapter 1" (4); "years LEP" with "years in Chapter 1 Migrant" and "new to District in 1983-84" (2); "years in Chapter 1" with "new to District in 1983-84"; Black with discipline.

R-Square: 0.448530 (45% VARIANCE ACCOUNTED FOR)

Notes:

1. Discriminant Analysis #13 differs from Discriminant Analysis #12 by the introduction of 13 interaction variables as predictors. The interaction variables are the variables listed under "Independent Variables" after the two slashes (//).

2. As in Discriminant Analysis #12, two mean values for each variable were used in place of missing data, one for cases in the dropout group and another for cases in the stay-in group. Cases with missing values received the mean appropriate to their group. In other words, if data were missing on a variable for a particular student who dropped out, the mean for dropouts on that variable was inserted in place of the missing information. If data were missing on a variable for a student who stayed in school, the mean for stay-ins on that variable was inserted.

3. The same coding for ethnicity and low income used in Discriminant Analyses #11 and #12 was used again. The dichotomous coding of sex as 0 and 1 used in Discriminant Analysis #12 was likewise reused. The same decision rules with respect to students "new to the District in 1983-84" and "1982-83 discipline incidents" were repeated in this analysis.

DISCRIMINANT ANALYSIS #14

Run date: 6/26/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 (N=4,641*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by free meal, white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, white by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math raw score by 1982-83 ITBS Work-Study Skills Total GE, years LEP, age, years LEP by ethnicity (Hispanic), age by new to District in 1983-84, 1983-84 TABS Math raw score by 1982-83 discipline incidents, years LEP by ethnicity (Black), age by years LEP (1979-80 - 1982-83), 1983-84 ITBS Work-Study Skills Total GE by special education status, low income (sibling), years LEP by years in Chapter 1 (1979-80 - 1982-83), 1982-83 ITBS Work-Study Total GE by years in Chapter 1, ethnicity (Black), contact hours per day in special education, age by LEP status, LEP status by ethnicity (Hispanic), 1982-83 ITBS Work-Study Skills by years in special education (1979-80 -1982-83), 1983-84 TABS Reading raw score by 1982-83 ITBS Work-Study Skills Total GE, ethnicity (white) by 1982-83 discipline incidents, ethnicity (Hispanic) by years in Chapter 1, years LEP by years in SCE, years in SCE, 1982-83 ITBS Work-Study Skills Total GE by not low

* When students who died or transferred are removed, N=3,944.

DISCRIMINANT ANALYSIS #14 (cont.)

income, special education status by new to District in 1983-84, 1983-84 TABS Writing mastery, years in Chapter 1 Migrant (1979-80 - 1982-83), years LEP by years in Chapter 1 Migrant, LEP status, ethnicity (white) by low income (free), ethnicity (white) by years in Chapter 1, ethnicity (Asian), ethnicity (American Indian) (32)

Variables Not Entering the Model: Low income (free), low income (reduced), not low income, ethnicity (Hispanic), ethnicity (white), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, 1983-84 TABS Math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, new to District in 1983-84, 1982-83 ITBS Reading Total GE score, ITBS Math Total GE score, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, years in Chapter 1 (1979-80 - 1982-83), years in special education (same years) (21)//age by ITBS Work-Study Skills Total GE, TABS Math raw score by ethnicity (Hispanic), TABS Math raw score by years in Chapter 1, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, age by Hispanic, ethnicity (white) by not low income, TABS Math raw score by ethnicity (white), ITBS Work-Study Skills Total GE by LEP status, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by ethnicity (Black), new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (17) ((38))

Strength of Association (1.0 = perfect prediction):			Correlation with Dropping Out
1.	TABS Math Raw Score by ITBS Work-Study Total GE	.180	- .425
2.	Years LEP (1979-80 - 1982-83)	.260	.381
3.	Age	.306	.282
4.	Years LEP by Ethnicity, Hispanic	.336	.236
5.	Age by New to District in 1983-84	.355	.125
6.	TABS Math Raw Score by 1982-83 Discipline	.371	.230
7.	Years LEP by Ethnicity, Black	.380	.155
8.	Age by Years LEP	.387	.380
9.	ITBS Work-Study Total GE by Special Education	.393	- .014
10.	Low Income, Sibling	.397	.162
11.	Years LEP by Years in Chapter 1	.400	.175
12.	ITBS Work-Study Total GE by Years in Chapter 1	.409	.203
13.	Ethnicity, Black	.412	.025
14.	Contact Hours Per Day in Special Education	.414	.012
15.	Age by LEP Status	.416	.027
16.	LEP Status by Ethnicity, Hispanic	.419	.051
17.	ITBS Work-Study by Years in Special Education	.421	.110
18.	TABS Reading Raw Score by ITBS Work-Study GE	.422	- .423
19.	Ethnicity, White, by 1982-83 Discipline	.423	.124
20.	Ethnicity, Hispanic, by Years in Chapter 1	.424	.157
21.	Years LEP by Years in SCE	.425	.066
22.	Years in SCE	.426	.090
23.	ITBS Work-Study Total GE by Not Low Income	.427	- .268

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DISCRIMINANT ANALYSIS #14 (cont.)

24.	Special Education by New to District in 1983-84	.427	.032
25.	1983-84 TABS Writing Mastery	.428	.220
26.	Years in Chapter 1 Migrant (1979-80 - 1982-83)	.429	.080
27.	Years LEP and Years in Chapter 1 Migrant	.429	.073
28.	LEP Status	.430	.025
29.	Ethnicity, White, by Free Meal	.430	.022
30.	Ethnicity, White, by Years in Chapter 1	.431	.067
31.	Ethnicity, Asian	.431	- .028
32.	Ethnicity, American Indian	.431	.022
		(cumulative)	

	HITS	MISSES	TOTAL
Dropouts	911 (70.3%)	385 (29.7%)	1296
Stay-Ins	2421 (91.5%)	226 (8.5%)	2647
	3332	611	3943
	84.5%	15.5%	

Chance vs. actual prediction for dropouts: 32.9% vs. 70.3%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 37.4%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.447615 (45% VARIANCE ACCOUNTED FOR)

Notes:

1. Discriminant Analysis #14 differs from Discriminant Analysis #13 by the introduction of an additional 25 interaction variables as predictors besides the 13 interaction variables already being used, for a total of 38 interaction variables. The interaction variables are the variables listed under "Independent Variables" after the two slashes (//). The variables which were added are the 14th through the 38th listed on page 1.

2. The run conditions used in Discriminant Analysis #13 with respect to missing values and coding of variables were repeated in Discriminant Analysis #14.

DISCRIMINANT ANALYSIS #15

Run date: 6/26/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 (N=4,641*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Reading raw score by 1982-83 ITBS Work-Study Skills Total GE, years LEP (1979-80 - 1982-83), age, years LEP by ethnicity (Hispanic), ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, age by new to District in 1983-84, years LEP by ethnicity (Black), age by years LEP, years LEP by years in Chapter 1 (1979-80 - 1982-83), ITBS Work-Study Skills Total GE by years in Chapter 1, low income (sibling), ethnicity (Black), TABS Math raw score by age, years in Chapter 1 Migrant (1979-80 - 1982-83), years LEP by years in Chapter 1 Migrant, not low income, ethnicity (Hispanic) by years in Chapter 1, age by ITBS Work-Study Skills Total GE, ITBS Work-Study Skills Total GE, TABS Reading raw score, ITBS Work-Study Total GE by years in special education, LEP status by ethnicity (Hispanic), age by LEP

* When students who died or transferred are removed, N = 3,944.
When special education students are removed, N = 3,660.

DISCRIMINANT ANALYSIS #15 (cont.)

status, LEP status, 1983-84 TABS Writing Mastery, 1983-84 TABS Reading mastery, new to District in 1983-84, ethnicity (white) by 1982-83 discipline incidents, years LEP by years in SCE (1979-80 - 1982-83), years in SCE, 1982-83 ITBS Reading Total GE, 1982-83 discipline incidents, ITBS Work-Study Total GE by LEP status, ethnicity (white) by low income (free), ethnicity (Black) by 1982-83 discipline incidents (35)

Variables Not Entering the Model: Low income (free), low income (reduced), ethnicity (American Indian), ethnicity (Asian), ethnicity (Hispanic), ethnicity (white), sex, 1983-84 TABS Math raw score, TABS Math mastery, TABS Writing raw score, 1982-83 ITBS Math Total GE score, ITBS Language Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, years in Chapter 1 (1979-80 - 1982-83), years in special education (same years) (17)//TABS Math raw score by ethnicity (Hispanic), TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chapter 1, special education status by new to District in 1983-84, TABS Math raw score by not low income, TABS Math raw score by 1982-83 discipline incidents, age by Hispanic, ethnicity (white) by not low income, TABS Math raw score by ethnicity (white), ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ethnicity (white) by years in Chapter 1 (1979-80 - 1982-83), ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, TABS Math raw score by ethnicity (Black), new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (18) ((35))

Strength of Association (1.0 = perfect prediction):			Correlation with Dropping Out
1.	TABS Reading Raw Score by ITBS Work-Study Total	.203	- .451
2.	Years LEP (1979-80 - 1982-83)	.280	.390
3.	Age	.328	.303
4.	Years LEP by Ethnicity, Hispanic	.360	.240
5.	ITBS Work-Study Total GE by 1982-83 Discipline	.379	.243
6.	Age by New to District in 1983-84	.394	.129
7.	Years LEP by Ethnicity, Black	.403	.161
8.	Age by Years LEP	.410	.389
9.	Years LEP by Years in Chapter 1	.415	.176
10.	ITBS Work-Study Total GE by Years in Chapter 1	.422	.206
11.	Low Income, Sibling	.430	.170
12.	Ethnicity, Black	.434	.036
13.	TABS Math Raw Score by Age	.437	- .327
14.	Years in Chapter 1 Migrant (1979-80 - 1982-83)	.442	.104
15.	Years LEP by Years in Chapter 1 Migrant	.443	.089
16.	Not Low Income	.445	- .154
17.	Ethnicity, Hispanic, by Years in Chapter 1	.446	.160
18.	Age by ITBS Work-Study Skills Total GE	.447	- .387
19.	1982-83 ITBS Work-Study Skills Total GE	.451	.426
20.	1983-84 TABS Reading Raw Score	.452	- .375
21.	ITBS Work-Study by Years in Special Education	.453	.103
22.	LEP Status by Ethnicity, Hispanic	.454	.048

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DISCRIMINANT ANALYSIS #15 (cont.)

23.	Age by LEP Status	.457	.019
24.	LEP Status	.458	.018
25.	1983-84 TABS Writing Mastery	.458	.234
26.	1983-84 TABS Reading Mastery	.459	.282
27.	New to District in 1983-84	.460	.119
28.	Ethnicity, White, by 1982-83 Discipline	.460	.123
29.	Years LEP by Years in SCE	.461	.067
30.	Years in SCE (1979-80 - 1982-83)	.462	.088
31.	1982-83 ITBS Reading Total GE	.463	- .368
32.	1982-83 Discipline Incidents	.463	.252
33.	ITBS Work-Study Total GE by LEP Status	.464	.013
34.	Ethnicity, White, by Low Income (Free)	.464	.024
35.	Ethnicity, Black, by 1982-83 Discipline	.465	.129
		(cumulative)	

	HITS	MISSES	TOTAL
Dropouts	854 (71.1%)	348 (29.0%)	1202
Stay-Ins	2260 (91.5%)	198 (8.1%)	2458
	3114	546	3660
	85.1%	14.9%	

Chance vs. actual prediction for dropouts: 32.8% vs. 71.1%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 38.3%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.468473 (47% VARIANCE ACCOUNTED FOR)

Notes:

1. Discriminant Analysis #15 differs from Discriminant Analysis #14 by the exclusion of all special education students from the analysis.

2. For the first time in this series of analyses, three variables initially entered the model but were removed in later steps: 1983-84 TABS Math raw score, ethnicity (Asian), and TABS Math raw score by LEP status.

3. The run conditions used in Discriminant Analysis #14 with respect to missing values and coding of variables were repeated in Discriminant Analysis #15.

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DISCRIMINANT ANALYSIS #16

Run date: 6/27/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 - American Indian (N=7*)

Independent
Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chapter 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Math mastery (1)

* A total of 4,641 students were first-time ninth graders in 1983-84. When students who died or transferred are removed, N = 3,944. Of these, 7 were American Indian students.

DISCRIMINANT ANALYSIS #16 (cont.)

Variables Not Entering the Model: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (31)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chapter 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((69))

Strength of Association (1.0 = perfect prediction):		Correlation with Dropping Out
1. 1983-84 TABS Math Mastery	1.00	1.000

	HITS	MISSES	TOTAL
Dropouts	4 (100.0%)	0 (0.0%)	4
Stay-Ins	3 (100.0%)	0 (0.0%)	3
	7	0	7
	100.0%	0.0%	

Chance vs. actual prediction for dropouts: 57.1% vs. 100.0%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 42.9%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.468473 (47% VARIANCE ACCOUNTED FOR)

DISCRIMINANT ANALYSIS #16

Run date: 6/27/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 - Asian (N=80*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS Math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)//age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chapter 1, TABS reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work Study skills Total GE by not low income, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to district in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha \leq .15$): 1982-83 discipline incidents, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, years LEP (1979-80-1982-83), 1983-84 TABS Math Mastery, age by new to District in 1983-84, age by LEP status, 1982-83 ITBS Reading Total GE, TABS Math raw score by years in Chapter 1 (1979-80-1982-83), ITBS Work-Study Skills Total GE by LEP status, TABS Math raw score by 1982-83 discipline incidents, not low income, ITBS Work-Study Skills Total GE by not low income, 1982-83 ITBS Language Total GE (13)

* A total of 4,641 students were first-time ninth graders in 1983-84. When students who died or transferred are removed, N = 3,944. Of these, 80 were Asian students.

47

DISCRIMINANT ANALYSIS #16 (cont.)

Variables Not Entering the Model: Age, low-income status in 1983-84 (3), ethnicity (5), sex, 1983-84 TABS Math raw score, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, ITBS Math Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years in special education (same years) (26)//age by ITBS Work-Study Skills Total GE, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, TABS Math raw score by not low income, TABS Math raw score by age, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to-District in 1983-84 by years LEP, TABS Math raw score by LEP status (31) ((57))

Strength of Association (1.0 = perfect prediction):		Correlation with Dropping Out
1. 1982-83 Discipline Incidents	.241	.491
2. ITBS Work-Study Total GE by 1982-83 Discipline	.443	.402
3. Years LEP (1979-80 - 1982-83)	.513	.192
4. 1983-84 TABS Math Mastery	.558	.336
5. Age by New to District in 1983-84	.608	.369
6. Age by LEP Status	.632	-.211
7. 1982-83 ITBS Reading Total GE	.661	-.196
8. TABS Math Raw Score by Years in Chapter 1	.682	-.063
9. ITBS Work-Study Total GE by LEP Status	.701	-.187
10. TABS Math Raw Score by 1982-83 Discipline	.723	.413
11. Not Low Income	.735	-.074
12. ITBS Work-Study Total GE by Not Low Income	.746	-.124
13. 1982-83 ITBS Language Total GE	.754	-.255
	(cumulative)	

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DISCRIMINANT ANALYSIS #16 (cont.)

	HITS	MISSES	TOTAL
Dropouts	17 (89.5%)	2 (10.5%)	19
Stay-Ins	61 (100.0%)	0 (0.0%)	61
	78	2	80
	97.5%	2.5%	

Chance vs. actual prediction for dropouts: 23.8% vs. 89.5%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 65.7%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.468473 (47% VARIANCE ACCOUNTED FOR)

DISCRIMINANT ANALYSIS #16

Run date: 6/27/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 - Black (N=701*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): Years LEP (1979-80 - 1982-83), age, 1983-84 TABS Reading raw score by 1982-83 ITBS Work-Study Skills Total GE, 1982-83 discipline incidents, new to District in 1983-84, ITBS Work-Study Skills Total GE by special education status, age by years LEP, years in Chapter 1 (1979-80 - 1982-83), years LEP by years in Chapter 1 (1979-80 - 1982-83), special education contact hours per day, low income (free), low income (reduced), years in SCE (1979-80 - 1982-83), TABS Math raw score by 1982-83 discipline incidents (14)

* A total of 4,641 students were first-time ninth graders in 1983-84. When students who died or transferred are removed, N = 3,944. Of these, 701 were Black students.

DISCRIMINANT ANALYSIS #16 (cont.)

Variables Not Entering the Model: Low-income status in 1983-84 (2), ethnicity (5), sex, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, LEP status, years in Chapter 1 Migrant, years in special education (same years) (23)// age by ITBS Work-Study Skills Total GE, age by LEP status, years LEP by Hispanic, years LEP by Black, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper 1, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (33) ((56))

Strength of Association (1.0 = perfect prediction):			Correlation with Dropping Out
1.	Years LEP (1979-80 - 1982-83)	.135	.369
2.	Age	.227	.258
3.	TABS Reading Raw Score by ITBS Work-Study Total	.272	-.340
4.	1982-83 Discipline Incidents	.298	.252
5.	New to District in 1983-84	.318	.098
6.	ITBS Work-Study Total GE by Special Education	.330	-.089
7.	Age by Years LEP	.340	.368
8.	Years in Chapter 1 (1979-80 - 1982-83)	.348	.265
9.	Years LEP by Years in Chapter 1	.384	.201
10.	Special Education Contact Hours Per Day	.389	-.045
11.	Low Income, Free	.395	.020
12.	Low Income, Reduced	.400	-.096
13.	Years in SCE (1979-80 - 1982-83)	.404	.167
14.	TABS Math Raw Score by 1982-83 Discipline	.407 (cumulative)	.228

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DISCRIMINANT ANALYSIS #16 (cont.)

	HITS	MISSES	TOTAL
Dropouts	176 (71.0%)	72 (29.0%)	248
Stay-Ins	398 (87.9%)	55 (12.1%)	453
	574	127	701
	81.9%	18.1%	

Chance vs. actual prediction for dropouts: 35.3% vs. 71.0%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 35.7%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.429485 (43% VARIANCE ACCOUNTED FOR)

DISCRIMINANT ANALYSIS #16

Run date: 6/27/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 - Hispanic (N=1,017*)

Independent Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chaper 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): 1983-84 TABS Reading raw score by 1982-83 ITBS Work-Study Skills Total GE, years LEP (1979-80 - 1982-83), age, TABS Math raw score by 1982-83 discipline incidents, new to District in 1983-84, low income (sibling), years LEP by years in SCE (1979-80 - 1982-83), age by years LEP, years LEP by years in Chapter 1 (1979-80 - 1982-83), TABS Math raw score by years in Chapter 1, special education status, special education contact hours per day, age by new to District in 1983-84, ITBS Work-Study Total GE by LEP status, 1983-84 TABS Writing mastery, 1982-83 ITBS Language Total GE, ITBS Math Total GE, special education by new to the District in 1983-84, LEP status, age by LEP status, years in Chapter 1 Migrant (1979-80 - 1982-83), years LEP by years in Chapter 1 Migrant (22)

* A total of 4,641 students were first-time ninth graders in 1983-84. When students who died or transferred are removed, N = 3,944. Of these, 1,017 were Hispanic students.

DIISCRIMINANT ANALYSIS #16 (cont.)

Variables Not Entering the Model: Low-income status in 1983-84 (3), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, 1982-83 ITBS Reading Total grade equivalent score, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, years in Chapter 1 (1979-80 through 1982-83), years in SCE, years in special education (same years) (21)// age by ITBS Work-Study Skills Total GE, years LEP by Hispanic, years LEP by Black, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (27) ((48))

Strength of Association (1.0 = perfect prediction):		Correlation with Dropping Out
1. TABS Reading Raw Score by ITBS Work-Study Total	.143	-.375
2. Years LEP (1979-80 - 1982-83)	.211	.348
3. Age	.287	.291
4. TABS Math Raw Score by 1982-83 Discipline	.310	.227
5. New to District in 1983-84	.328	.085
6. Low Income, Sibling	.337	.185
7. Years LEP by Years in SCE (1979-80 - 1982-83)	.344	.042
8. Age by Years LEP	.350	.348
9. Years LEP by Years in Chapter 1	.356	.193
10. TABS Math Raw Score by Years in Chapter 1	.373	.209
11. Special Education Status	.380	-.042
12. Special Education Contact Hours Per Day	.386	-.015
13. Age by New to District in 1983-84	.388	.092
14. ITBS Work-Study Total GE by LEP Status	.390	.015
15. 1983-84 TABS Writing Mastery	.392	.195
16. 1982-83 ITBS Language Total GE	.394	-.299
17. 1982-83 ITBS Math Total GE	.398	-.361
18. Special Education by New to the District	.399	.035
19. LEP Status	.400	.036
20. Age by LEP Status	.404	.040
21. Years in Chapter 1 Migrant (1979-80 - 1982-83)	.406	.106
22. Years LEP by Years in Chapter 1 Migrant	.410	.097
	(cumulative)	

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DISCRIMINANT ANALYSIS #16 (cont.)

	HITS	MISSES	TOTAL
Dropouts	365 (79.4%)	95 (20.7%)	460
Stay-Ins	473 (84.9%)	84 (15.1%)	557
	838	179	1017
	82.4%	17.6%	

Chance vs. actual prediction for dropouts: 45.2% vs. 79.4%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 34.2%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.428298 (43% VARIANCE ACCOUNTED FOR)

DISCRIMINANT ANALYSIS #16

Run date: 6/27/89

Program: DW$D834R

Analysis Group: First-Time Ninth Graders of 1983-84 - White (N = 2,138*)

Independent
Variables: Age, low-income status in 1983-84 (4), ethnicity (5), sex, 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Reading mastery, TABS Writing raw score, TABS writing mastery, new to District in 1983-84, 1982-83 ITBS Reading Total grade equivalent score, ITBS Math Total GE, ITBS Language Total GE, ITBS Work-Study Skills Total GE, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE, years LEP, years in special education (same years) (32)// age by ITBS Work-Study Skills Total GE, age by LEP status, age by years LEP, years LEP by Hispanic, years LEP by Black, years LEP by years in Chapter 1, years LEP by years in SCE, TABS Math raw score by Hispanic, TABS Math raw score by ITBS Work-Study Skills Total GE, TABS Math raw score by years in Chapter 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, TABS Math raw score by 1982-83 discipline incidents, age by new to District in 1983-84, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by special education status, ITBS Work-Study Skills Total GE by years in Chapter 1, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (38) ((70))

Variables Selected for Entry into Model ($\alpha < .15$): Years LEP (1979-80 - 1982-83), age, age by new to District in 1983-84, TABS Math raw score by 1982-83 discipline incidents, age by years LEP, ITBS Work-Study Skills Total GE by special education status, years in special education, low income (sibling), new to District in 1983-84, age by LEP status, years LEP by years in Chapter 1 (1979-80 - 1982-83), TABS Math Raw Score by ITBS Work-Study Total, ITBS Work-Study total GE by years in Chapter 1, 1983-84 TABS Reading mastery, age by ITBS Work-Study Skills Total GE, ITBS Work-Study Skills Total GE, Sex, 1982-83 ITBS Language Total GE, 1982-83 ITBS Reading Total GE, years LEP by years in SCE (1979-80 - 1982-83), 1983-84 TABS Writing Mastery (21)

* A total of 4,641 students were first-time ninth graders in 1983-84. When students who died or transferred are removed, N = 3,944. Of these, 2,138 were White students.

DISCRIMINANT ANALYSIS #16 (cont.)

Variables Not Entering the Model: Low-income status in 1983-84 (3), ethnicity (5), 1982-83 discipline incidents, 1983-84 TABS Math raw score, TABS math mastery, TABS Reading raw score, TABS Writing raw score, ITBS Math Total grade equivalent score, ITBS Total Battery GE, special education status, special education contact hours per day, LEP status, years in Chapter 1 (1979-80 through 1982-83), years in Chapter 1 Migrant, years in SCE (same years) (31)//years LEP by Hispanic, years LEP by Black, TABS Math raw score by Hispanic, TABS Math raw score by years in Chapter 1, TABS Reading raw score by ITBS Work-Study Skills Total GE, LEP status by Hispanic, special education status by new to District in 1983-84, ITBS Work-Study Skills Total GE by 1982-83 discipline incidents, TABS Math raw score by not low income, TABS Math raw score by age, age by Hispanic, Hispanic by years in Chapter 1, white by not low income, white by low income (free), white by 1982-83 discipline incidents, TABS Math raw score by white, ITBS Work-Study Skills Total GE by not low income, ITBS Work-Study Skills Total GE by LEP status, years LEP by years in Chapter 1 Migrant, ITBS Work-Study Skills Total GE by years in special education, ethnicity (white) by years in Chapter 1, ITBS Work-Study Skills Total GE by ethnicity (Hispanic), ethnicity (Hispanic) by years in Chapter 1 Migrant, new to District in 1983-84 by years in Chapter 1, ethnicity (Black) by 1982-83 discipline incidents, TABS Math raw score by Black, new to District in 1983-84 by years LEP, TABS Math raw score by LEP status (28) ((49))

Strength of Association (1.0 = perfect prediction):		Correlation with Dropping Out
1. Years LEP (1979-80 - 1982-83)	.215	.463
2. Age	.399	.277
3. Age by New to District in 1983-84	.417	.162
4. TABS Math Raw Score by 1982-83 Discipline	.430	.218
5. Age by Years LEP	.437	.162
6. ITBS Work-Study total GE by Special Education	.442	.014
7. Years in Special Education (1979-80 - 1982-82)	.448	.120
8. Low Income, Sibling	.451	.116
9. New to District in 1983-84	.453	.151
10. Age by LEP Status	.456	-.018
11. Years LEP by Years in Chapter 1	.458	.095
12. TABS Math Raw Score by ITBS Work-Study Total	.460	-.453
13. ITBS Work-Study Total by Years in Chapter 1	.461	.115
14. 1983-84 TABS Reading Mastery	.477	.201
15. Age by ITBS Work-Study Skills Total GE	.463	-.410
16. 1982-83 ITBS Work-Study Skills Total GE	.473	-.439
17. Sex	.474	.024
18. 1982-83 ITBS Language Total GE	.475	-.395
19. 1982-83 ITBS Reading Total GE	.475	-.362
20. Years LEP by Years in SCE	.476	.050
21. 1983-84 TABS Writing Mastery	.477	.201

DiscAn12/4/9/90
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DISCRIMINANT ANALYSIS #16 (cont.)

	HITS	MISSES	TOTAL
Dropouts	379 (67.1%)	186 (32.9%)	565
Stay-Ins	1489 (94.7%)	84 (5.3%)	1573
	1868	270	2138
	87.4%	12.6%	

Chance vs. actual prediction for dropouts: 26.4 vs. 67.1%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 40.7%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.484277 (48% VARIANCE ACCOUNTED FOR)

Notes:

1. Discriminant Analysis #16 differs from Discriminant Analysis #15 by performing separate analyses by ethnic group.
2. The run conditions used in Discriminant Analysis #15 with respect to missing values and coding of variables were repeated in Discriminant Analysis #16.
3. No special education students were excluded from this analysis.

DISCRIMINANT ANALYSIS #16 (cont.)

Chance vs. actual prediction for dropouts: 35.3% vs. 71.0%

PREDICTION OF DROPOUTS IS BETTER THAN CHANCE BY 35.7%.

GENERAL LINEAR MODELS PROCEDURE

Independent Variables (70): Same as in the discriminant analysis

R-Square: 0.468473 (47% VARIANCE ACCOUNTED FOR)

Notes:

1. In this analysis, special education students who received more than three hours of service during the 1983-84 school year were excluded. In Discriminant Analysis #15, all special education students were excluded, whereas in Discriminant Analysis #16, only those students whose hours of service indicate a severe disability are excluded.

2. For the first time in this series of analyses, three variables initially entered the model but were removed in later steps: 1983-84 TABS Math raw score, ethnicity (Asian), and TABS Math raw score by LEP status.

3. The run conditions used in Discriminant Analysis #14 with respect to missing values and coding of variables were repeated in Discriminant Analysis #15.

DiscAn12/6-30-89
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